PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

May 25, 1852.—J. Gould, Esq., F.R.S., Vice-President, in the Chair.

Descriptions of a few new recent species of Brachiopoda. By Th. Davidson, F.G.S., Member of the Geol. Soc. of France, etc.

In the valuable collection of recent Brachiopoda assembled by Mr. Cuming, some species seem new, and undescribed in Mr. Sowerby's Monograph; and it is at that gentleman's request that I have prepared the following descriptions, which will complete, with one exception, the *Ter. septigera* of Lovén (still unfigured), all the new recent forms which have hitherto come under my observation.

In a paper published in the 'Annals and Magazine of Nat. Hist.' for May 1852, I endeavoured to class all the recent species according to their internal organization, into *four families* and *thirteen genera*, or *sections*, as it is evident that these, as well as the fossil forms, must be comprised in the proposed subdivisions introduced within the last few years with more or less success into the nomenclature; and singular enough, notwithstanding the greater facilities of examining both the internal arrangements as well as the animal in recent forms, these important characters have not yet been made use of by malacologists, who still place nearly all these Terebratuliform shells in one genus, *Terebratula*; while palæontologists, working under much greater difficulties, have by dint of perseverance and trouble discovered the organization of a multitude of extinct forms, filled by the hardest matrix: and I have no doubt but that before very many years the internal details of all the fossil species will be as well known as if they were in the recent state.

Much, however, remains to be done before the proposed classifications can be decidedly and definitely adopted, and many modifications will be considered requisite, as it is evident, from our present knowledge, that some genera or sections are more or less closely related, and that certain species possess characters common to more than one genus, but these examples are few and exceptional in comparison to those presenting a similar organization: thus all forms with a free, simply attached loop, as in *Ter. Australis, Ter. Californiana*, &c., must be placed in the same section; all those with the loop affixed to the hinge plate and to a central more or less elevated septum, such as *Ter. dorsata, Ter. rubicunda*, &c., into another group; those also in which the calcareous appendages consist of only two central diverging lamellæ, such as *Ter. rubra, Ter. pisum*, and others, must necessarily be placed close to each other, &c. The arrangement of the species is, therefore, not a matter of indifference, but ought to partake of those rules, followed for the other classes of Mollusca, wherein genera are often admitted on far less important differences.

A complete monograph of the recent species thus framed, with

figures, synonyms, dates, &c., is still a desideratum, and I hope ere long that the science of Conchology will be enriched by such a valuable and necessary contribution.

The only object of this short paper is to describe some unfigured forms, to which I have added some remarks on a few species not hitherto completely understood.

1. Terebratula Grayii, Dav. 1852.

Diagnosis.—Shell irregularly pentagonal, rather broader than long; valves unequally convex (the perforated being gibbous and the smaller valve rather flattened); beak not much produced, truncated by a very large emarginate foramen—the deltidial plates are disunited, a small portion of the aperture being completed by the umbo; hinge-line straight; beak-ridges sharply defined, leaving between them and the hinge-margin a wide, almost flat area; surface ornamented by a great number of irregular and unequal radiating costæ, augmenting rapidly from numerous bifurcations and intercalations of smaller plaits between the larger costæ; colour partly yellow and red, this last becoming more vivid as it approaches the concentric lines of growth; structure punctate; internal appendages consisting of a simply attached loop, the riband-shaped lamella extending to about four-fifths of the length of the shell before bending back on itself. Dimensions variable: length 14, width 15, depth 9 lines.

Hab. Coast of Korea. Coll. Cuming.

Obs.—This fine species has been known to me for several years, but unobserved by other collectors, who erroneously supposed it to be the *Ter. rubra* of Pallas, to which it bears some external resemblance, but is essentially different in its internal arrangements; the loop of our new form being similar to that of *Ter. Australis* or *Ter. lenticularis*, &c., while the appendages of *Ter. rubra*, which is the type of my lately proposed genus *Kraussia*, consist only of two central diverging branches, somewhat spread out at their extremities. *Ter. Grayii* is also distinct from *Terebratella Zelandica*, the loop of this last being doubly attached, as in all the species of that section.

2. Terebratella Bouchardii, Dav. 1852.

Diagnosis.—Shell of a suborbicular or trapezoidal form, longer than wide, or broader than long; perforated valve most convex, laterally compressed and keeled, the imperforated valve presenting a longitudinal depression extending from about the middle of the valve to the front; beak produced, recurved and truncated by a large circular and entire foramen; deltidium in two pieces, meeting at the umbo; beak-ridges defined, leaving between them and the hinge-margin a slight concave false area; surface smooth, interrupted only by a few concentric lines of growth; colour light yellow; internal calcareous lamellæ fixed first to the crural base, and again to the longitudinal mesial septum, before attaining their greatest length and bending back on themselves to form the loop; structure punctate. Length 14, width 13, depth 8 lines.

Hab. Unknown. Coll. of Mr. Cuming.

Obs.—This species seems to differ from *Terebratella Coreanica* of

Adams and Reeve principally in the form of its beak and in its coloration; the Corean form is beautifully strigated with vivid red, while *Ter. Bouchardii* is of a uniform light yellow colour; the details of the loop seem likewise to differ a little.

3. Terebratella Evansii, Dav. 1852.

Diagnosis.—Shell subovate, longer than wide; perforated valve most convex, smaller one rather compressed; beak tapering, not much recurved, and obliquely truncated by an emarginate foramen; deltidia small; beak-ridges well defined, leaving between them and the hinge-margin a false area; surface ornamented by a few unequal bifurcated and intercalated costæ; colour pale red; structure punctate; apophysary system composed of a central longitudinal septum, not exceeding half the length of the valve, arising rapidly in the form of a narrow elevated plate, almost reaching the centre of the perforated valve, to the middle of which, and to the crural base, are doubly attached the calcareous riband-shaped lamellæ forming the loop. Length 4, width $3\frac{1}{2}$, depth $1\frac{1}{2}$ lines.

Hab. New Zealand. Coll. Cuming.

Obs.—On first inspection, I thought this shell, of which Mr. Cuming has two examples, might be the young of *Terebratella Zelandica*; but on examining the calcareous appendages, I found great dissimilarity in their respective details. In *Ter. Zelandica* the loop is first fixed to the hinge-plate, and again, by a transverse shelly horizontal process, to the extremity of a slightly elevated mesial septum; the lamella proceeding again before bending back, as in all *Terebratellæ*: but in the interesting little form under notice the mesial septum forms a narrow elevated plate, extending as far and further than the greatest length of the lamellæ, which last are fixed to the middle portion of the septum. The remarkable deviation from the general details of the arrangements in this *Terebratella* has prompted me to examine with care a multitude of specimens of different species belonging to the genus, and I was not a little surprised to find that some few other forms presented a similar arrangement, such as *Ter. crenulata*, *Ter. Cumingii*, &c., thus forming a passage into *Magas*, which last, although generically distinct, can no longer constitute a separate family from the *Terebratulidæ*.

4. Terebratella? Cumingii, Dav. 1852.

Diagnosis.—Shell very thick, ovato-oblong; larger valve most convex, slightly keeled; imperforated one rather depressed; beak produced, tapering, not much recurved, and truncated by a small oval foramen, beginning at the summit of the beak, and directing itself on the opposite side to the area; no visible deltidium; a concave triangular area; surface smooth, strongly marked by concentric lines of growth; colour white, or slightly tinged with red; shell articulating by means of two strong teeth in the larger and corresponding sockets in the smaller valve; apophysary system very complicated, composed of a mesial longitudinal elevated triangular septum extending to about two-thirds of the length of the smaller valve, and which

arising from under the cardinal process and crural base, by a gentle curve reaches and touches the larger valve near to its anterior portion, from whence it descends by an almost perpendicular line to the bottom of the valve; the calcareous riband-shaped lamellæ first proceed from the socket walls, directing themselves by a gentle curve to the anterior portion of the septum, to which they become attached before bending on themselves to form a loop; the arms are of a brilliant red colour. Length 5, width 4, depth 2½ lines.

Hab. New Zealand. Coll. Cuming.

Obs.—Two specimens of this remarkable shell have been obtained by Mr. Cuming, and it is one of the most interesting among the recent forms, presenting great difficulties from an assemblage of characters peculiar to more than one of the proposed sections. In outward shape, character of its foramen, and interior of perforated valve, it much resembles *Bouchardia rosea*; its foramen is likewise very similar in position to that presented by several species of *Trigonosemus*; the shape and position of its central elevated septum, which touches a portion of the centre of the larger valve, relates it to *Magas*, and the disposition of the lamellæ to *Terebratella*. I therefore do not feel certain in what genus this curious shell should be placed: it is not a true *Terebratella*, but there I have placed it for the present, on account of the form of the loop.

5. Terebratella Spitzbergensis, Dav. 1852.

Diagnosis.—Shell ovate, slightly pentagonal, longer than wide; valves almost equally convex; beak produced, recurved, and truncated by a middle-sized foramen; deltidium in two pieces, partly surrounding the aperture; beak-ridges not very sharply defined; smaller valve slightly depressed near the front; surface smooth, strongly punctate, and marked by a few concentric lines of growth; colour light yellow; apophysary system composed of a central longitudinal septum, extending to a little beyond half the length of the shell, in the form of a narrow plate somewhat elevated at its extremity, to which and to the hinge-plate are attached the calcified riband-shaped lamellæ forming the loop. Length 4, width 3, depth 2 lines.

Hab. Spitzbergen.

Obs.—This small *Terebratella* seems distinguishable from all the other recent forms of the genus, by its dimensions, regular ovate shape, thinness of shell, and comparatively short, doubly-attached loop, which does not exceed half the length of the valve. I have hitherto been able to examine but one specimen, from the collection of Robert M'Andrew, Esq., and Mr. Cuming.

6. Terebratulina Cumingii, Dav. 1852.

Diagnosis.—Shell ovate, somewhat pentagonal, nearly as wide as long; valves almost equally convex; beak small, obliquely truncated by a circular emarginate foramen; deltidial plates disunited, a small portion of the aperture being completed by the umbo; auricular expansions on either side of the umbo very small; surface ornamented by a great number of minute radiating elevated striæ, augmenting

rapidly by the intercalation of smaller costæ at variable distances between the larger ones; the front margin of the larger valve indents the smaller one; colour white, tinged with yellow; structure punctate; internal apophysary supports short and annelliform. Length $3\frac{1}{2}$, width 3, depth 2 lines.

Hab. Chinese Seas. Coll. Cuming.

Obs.—This little *Terebratulina* may be easily distinguished from all the other recent species of the genus by its size and relative width and length, being much more convex and globular.

7. Morrisia anomioides, Scacchi, sp. 1843.

Orthis anomioides, Scacchi in Phil. Moll. Sicil. ii.

Terebratula appressa, Forbes, Report on the Mollusca and Radiata of the Ægean Sea, 1843.

Diagnosis.—Shell minute, circular, depressed; foramen large, round, encroaching equally on both valves; larger valve with a straight hinge-area; deltidial plates minute, widely separated; smaller valve deeply notched at the umbo; apophysary system consisting of two branches originating at the base of the dental sockets, and united to a small elevated process arising from the centre of the valve.

Animal furnished with two subspiral or *sigmoid* arms fringed with comparatively large cilia; the shell is of a green colour, with bright orange ovaries contrasting with the brilliant white of the ciliated arms; structure punctate. Length 1, width $1\frac{1}{4}$, depth $\frac{1}{2}$ line.

Hab. Mediterranean; depth 95 fathoms (Forbes).

Obs.—Some of Philippi's figures of *Ter. seminulum* are so like specimens of *T. appressa* (Forbes), that I at first imagined they might belong to the same type; and in my paper published in the 'Ann. and Mag. of Nat. Hist.' for May 1852, I placed *Ter. appressa* of Forbes as a synonym of Philippi's species: but since that period I have had reasons to believe this to be an error, and that in reality the Italian author's type does not belong to the same species nor even genus, but would be a synonym of *Argiope* (*Ter.*) *Neapolitana* of Scacchi. I have also ascertained that the shell and animal of this species are figured by Philippi, in the second volume of his 'Sicilian Mollusca.'

8. Kraussia Lamarckiana, Dav. 1852.

Diagnosis.—Shell of a somewhat tetragonal form, flattish, with a moderately deep longitudinal depression in the smaller valve and a corresponding keel in the larger one; hinge-line nearly straight; beak truncated by a large emarginate foramen, completed by two small deltidial plates, and by a portion of the umbo of the smaller valve; hinge-area flat, well defined; surface ornamented by a number of small costæ, augmenting here and there by bifurcation and intercalation at various intervals; apophysary system consisting of two short, central, diverging branches, bifurcated at their extremities; structure punctate; colour light yellow. Length 3, width 3, depth $1\frac{1}{2}$ lines.

Hab. Sydney and New Zealand.

Obs.—This species is found near Sydney, living in company with *Ter. Australis*, as may be seen by the specimen in the British Museum; it is distinguished from *K. pisum* and *K. Deshayesii*, by its somewhat tetragonal shape, stronger and fewer costæ, as well as by the details of its loop, relating it more than any of the other species of *Kraussia* to the section *Megerlia*; its colour is likewise of a uniform yellowish tint, while the above-mentioned species are differently tinged with red.

9. Kraussia Deshayesii, Dav. 1852.

Terebratula Capensis, Adams and Reeve, Voyage of the Samarang, p. 70. pl. 21. f. 4, 1850 (non *T. Capensis*, Gmel.).

Diagnosis.—Shell subovate, generally rather longer than wide; valves nearly equally convex, a deep longitudinal depression extending from near the umbo to the front in the smaller valve, with a corresponding keel in the perforated one; beak produced, and truncated by a large emarginate foramen; deltidia small, nearly triangular, a portion of the circumference being completed by the umbo; surface ornamented by a great number of small raised costæ, augmenting rapidly by bifurcation and intercalation of smaller plaits at variable distances from the beak and umbo; structure punctate; colour light yellow, with stripes of red; apophysary system consisting of two short, central, diverging lamellæ expanded at their extremities. Length 6, width 4, depth 2 lines.

Hab. Korea. Coll. Cuming.

10. Argiope Neapolitana, Scacchi, sp.

Terebratula Neapolitana, Scacchi, Oss. Zool. ii. p. 18.

Terebratula seminulum, Philippi, En. Moll. Siciliæ, 1836; Sow. Th. Conch. pl. 71. f. 85, 88.

Argiope Forbesii, Dav. Ann. and Mag. of Nat. Hist. May 1852.

Diagnosis.—Shell small, suborbicular, nearly as long as wide, compressed, emarginated in front; valves unequal, slightly convex, almost smooth or ornamented by a few rounded and nearly obsolete radiating costæ; a longitudinal depression extending along the centre of the smaller valve; beak produced; foramen large, with a small, lateral, deltidial plate, and an area on either side; hinge-line straight; apophysary system consisting of a small longitudinal mesial septum, with a complete two-lobed loop; colour light yellow; structure largely punctate. Length $1\frac{1}{2}$, width $1\frac{1}{2}$, depth $\frac{1}{2}$ line.

Hab. Naples, and different parts of the Mediterranean, in from 60 to 105 fathoms (Forbes).

Obs.—Since the publication of my paper in the 'Annals,' May 1852, I have, through the kindness of Mr. Hanley, been enabled to examine two specimens, said to be the types of Scacchi's *Ter. Neapolitana*, and, according to Küster, the *Ter. seminulum* of Philippi would be a synonym; although the last-named author's species, from his illustration presenting a deep notch in the umbo (a character never seen in any *Argiope*), had led me erroneously to believe *T. seminulum* the same as Prof. Forbes's *T. appressa*. The figures of

Ter. Neapolitana given both by Scacchi, Philippi, and Küster, do not represent the characters of the species under notice,—so much so that I believed it new, and gave to it the name of *Argiope Forbesii*, which must now be considered only a synonym: and Sowerby's figure correctly illustrates the species.

11. Rhynchonella nigricans, Sow. sp. 1846.

Diagnosis.—Shell inequivalve, irregularly tetrahedral, wider than long; beak acute, and slightly recurved; foramen not entirely surrounded by the deltidial plates, a portion being completed by the umbo; beak-ridges well defined, leaving between them and the hinge-line a false area, not indenting much the smaller valve; surface ornamented by a variable number of sharp plaits, about twenty-five on each valve, a few of which are due to intercalation; mesial fold not prominent, but defined, with a corresponding shallow sinus in the larger valve; apophysary system consisting of two short curved lamellæ; colour bluish black; structure impunctate. Length 8, width 9, depth 4 lines.

Hab. Five miles east of Ruapuke Island, New Zealand; dredged by Mr. Evans, R.N., in 19 fathoms off coral and rock. Coll. Cuming.

Obs.—When Sowerby described this interesting shell, only one small young specimen, without locality, was known; since then Mr. Evans has dredged several, some of which exceeded the dimensions above given. I therefore thought it advisable to redescribe the species, more especially as it is scarcely distinguishable from half-grown specimens of *R. concinna*, Sow.

12. Orbicula Evansii, Dav. 1852.

Diagnosis.—Shell irregularly circular, nearly as wide as long, very thick; both valves almost equally orbicular or suborbicular; apex subcentral; the unattached valve is ornamented by numerous strong, radiating, elevated striæ, which augment rapidly by the intercalation of numerous smaller costæ at variable distances from the apex; these are intersected by numerous concentric laminæ of growth; attached valve very deep; disk of adhesion small, almost central; fissure minute, elongated; surface covered by concentric raised laminæ, with longitudinal striæ all round and near the edge; colour yellow; texture horny. Length $5\frac{1}{2}$, width 6, depth 4 lines.

Hab. Bodegas. Coll. Cuming.

Obs.—Mr. Cuming has three specimens of this *Orbicula*, all similar in appearance, and distinguishable from *O. Cumingii* and *O. strigata* by the great convexity of the attached valve, which is flat in the two above-mentioned species; the disk of adhesion is likewise much smaller in *O. Evansii*, and the striation stronger.

BOTANICAL SOCIETY OF EDINBURGH.

May 11, 1854.—Professor Balfour, President, in the Chair.

Dr. Greville mentioned that he had been in correspondence with Mr. Wilson upon the subject of the North Uist Moss, which had been referred by that gentleman to *Leucodon Lagurus*, while he him-